

AMENDMENTS TO THE CLAIMS

Claims 1 through 22 canceled.

23. (New) A process for the enzymatic synthesis of polyol acrylates, in which an aliphatic polyol is reacted with an acrylic acid compound or an alkyl ester thereof in bulk or in a liquid reaction medium comprising an organic solvent, in the presence of an enzyme which is selected from hydrolases and transfers acrylate groups, and after the end of the reaction the polyol acrylate(s) formed is (are) isolated optionally from the reaction mixture.

24. (New) A process as claimed in claim 23, wherein the liquid reaction medium has an initial water content of less than about 10% by volume.

25. (New) A process as claimed in either of the preceding claims, wherein acrylic acid compound and polyol are used in a molar ratio of about 100:1 to 1:1.

26. (New) A process as claimed in claim 23, wherein the acrylic acid compound is acrylic acid, lower-alkyl-substituted acrylic acid, or the alkyl esters of these compounds, or mixtures thereof.

27. (New) A process as claimed in claim 23, wherein the polyol is a straight-chain or branched or carbocyclic, saturated or unsaturated hydrocarbon compounds having at least 3 carbon atoms or at least 3 (esterifiable) hydroxyl groups in optically pure form or as a stereoisomer mixture, or mixtures of different polyols.

28. (New) A process as claimed in claim 27, wherein the polyol is a straight-chain, branched or cyclic saturated hydrocarbons having 3 to 30 carbon atoms and from 3 to 10 hydroxyl groups.

29. (New) A process as claimed in claim 23, wherein a completely acrylated polyol acrylate is added to the reaction medium, the polyol acrylate being the ester of an acrylic acid compound and a polyol as defined in claim 23.

30. (New) A process as claimed in claim 23, wherein the polyol is glycerol, diglycerol, triglycerol, 1,2,4-butanetriol, trimethylolmethane, trimethylolethane, trimethylolpropane, trimethylolbutane, 2,2,4-trimethyl-1,3-pentanediol, pentaerythritol, ditrimethylolpropane, dipentaerythritol, tripentaerythritol, D-, L-, and mesoerythritol, D- and L-arabitol, adonitol, xylitol, sorbitol, mannitol, dulcitol or inositols, or the mixtures or alkoxylates thereof.

31. (New) A process as claimed in claim 23, wherein the hydrolase is esterases (E.C. 3.1.-.-).

32. (New) A process as claimed in claim 31, wherein the esterase is lipases (E.C. 3.1.1.3), glycosylases (E.C. 3.2.-.-), or proteases (E.C. 3.4.-.-) in free or immobilized form.

33. (New) A process as claimed in claim 23, wherein the organic solvent is C₁-C₆ alkanols, pyridine, polyalkylene glycol dialkyl ethers, alkylene carbonate, C₁-C₆ alkyl alkanecarboxylic esters, acetone, 1,4-dioxane, 1,3-dioxolane, THF, dimethoxymethane, dimethoxyethane, or mixtures thereof.

34. (New) A process as claimed in claim 23, wherein the enzyme content of the reaction medium is in the range from about 0.01 to 10% by weight, based on the polyol used.

35. (New) A process as claimed in claim 23, wherein the reaction temperature is in the range from 0 to about 100°C.

36. (New) A process as claimed in claim 23, wherein the reaction medium is single-phase or multiphase and wherein the reactants are present in solution, suspension or emulsion.

37. (New) A process as claimed in claim 23, wherein alcohol produced during the transesterification or water of reaction produced during the esterification is removed from the reaction equilibrium.

38. (New) A process for preparing polymeric polyol acrylates, wherein at least one polyol acrylate is prepared by a process as claimed in claim 23, optionally separating from the reaction mixture, and optionally polymerizing together with further comonomers.
39. (New) A process as claimed in claim 37, wherein a reaction product comprising substantially polyol monoacrylates is reacted with at least one comonomer to form a linear copolymer.
40. (New) A polymeric polyol acrylate obtainable by a process as claimed in claim 38.
41. (New) A reaction product comprising polyol acrylate, obtainable by a process as claimed in claim 23.
42. (New) A reaction as claimed in claim 41 containing from about 60 to 100 mol%, based on the total molar number of polyol acrylate, of compounds having both alcohol functionalization and acrylate functionalization.
43. (New) A process for the preparation of coating materials which comprises using the polymeric polyol acrylate as claimed in claim 40.
44. (New) The process as claimed in claim 43, wherein the coating materials are thermally curable and have a total extractable fraction after thermal curing, of less than 20% by weight.
45. (New) The process as claimed in claim 44, wherein after thermal curing alone the coatings are not tacky.